Tensile and water absorption properties of biodegradable composites derived from cassava skin/polyvinyl alcohol with glycerol as plasticizer

Abstract:

Natural organic and abundant resources biopolymers received more attention due to their low cost, availability and degradability after usage. Cassava skin was used as natural fillers to the polyvinyl alcohol (PVA). Cassava skin/poly vinyl alcohol blends were compounded using melt extrusion twin screw extruder and test samples were prepared using the compression method. Various ratios of cassava skin and glycerol were investigated to identify suitable composition based on the water absorption and tensile properties. The water absorption of the cassava skins/PVA samples increased at higher composition of cassava skin due to their hydrophilic properties but decrease with glycerol content. The strength of the cassava skins/PVA samples increased with the higher composition of cassava skin up to 70 wt% while gradually decreased with the increasing composition of glycerol. The Young modulus increased with glycerol content but decreased with fibre loading up to 70 wt%. Elongation at break decreased with fibre loading and glycerol up to 70 wt% and 30 phr, respectively.